

**HEALTH AND SAFETY PLAN
FOR
PHASE II ENVIRONMENTAL SITE ASSESSMENT**

**105 EAST MICHIGAN AVENUE
KALAMAZOO, MICHIGAN**

REVISION 1

**OCTOBER 2009
PROJECT NO. G090585**



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LIST OF ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
CFR	Code of Federal Regulations
CPR	Cardiopulmonary Resuscitation
EMS	Emergency Medical Service
FID	Flame Ionization Detector
FTC&H	Fishbeck, Thompson, Carr & Huber, Inc.
GWQA	Groundwater Quality Assurance Report
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSO	Health and Safety Officer
IDLH	Immediately Dangerous to Life and Health
LEL	Lower Explosive Limit
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
mg/m ³	milligrams per cubic meter of air
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Association
NIOSH	National Institute of Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
OSHA	U.S. Occupational Safety and Health Administration
OVA	Organic Vapor Analyzer, Flame Ionization Detector
PEL	Permissible Exposure Level
PID	Photoionization Detector
PPC	Personal Protective Clothing
PPE	Personal Protective Equipment
PPM	parts per million
RIM	Reaction Injection Molding
SCBA	Self-Contained Breathing Apparatus
TWA	Time-Weighted Average
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound



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1.0 INTRODUCTION

The purpose of this HASP is to provide FTC&H employees with guidance during their activities at 105 East Michigan Avenue in Kalamazoo, Michigan (Figure 1). This HASP specifically covers the work that will be performed in hazardous areas subject to the HAZWOPER requirements defined in 29 CFR 1910.120. The requirements, procedures, and recommendations in this HASP are for the sole use of FTC&H personnel and should not be considered the overall site HASP or any contractor's or subcontractor's HASP.

Site information and data have been obtained from previous investigations conducted by others in the study area. Because the potential exists for contact with hazardous substances, this HASP has been written in accordance with 29 CFR 1910.120. All FTC&H personnel working within a designated exclusion or temporary exclusion zone will meet the training and health monitoring requirements specified in 29 CFR 1910.120.

All contractors or subcontractors are required to provide trained personnel and meet the requirements set forth in 29 CFR 1910.120. No contractor/subcontractor or agent, employee, or assignee of a contractor/subcontractor should work within specific areas (the temporary exclusion or exclusion zone) at this site unless they comply in full with the health and safety requirements specified in 29 CFR 1910.120.

Contractors, subcontractors, government agencies or their agents, employees, or assignees are not permitted to adopt this HASP, in whole or in part. However, a copy of this HASP is available for the contractor's/subcontractor's review in compliance with federal and state regulations. FTC&H makes no expressed or implied warranties as to the accuracy of any information contained within the HASP or the sufficiency of the HASP to prevent injuries, death, or property damage.

All employees of FTC&H who may have any contact with groundwater or soils from the site area are obligated to read and comply with the requirements in this HASP. A statement that these individuals have read and will comply with these requirements must be signed before entering the site (Appendix 1). A copy of this HASP and the compliance statement will be maintained at the site with the Site HSO.

FTC&H will not assume any responsibilities for any contractor's or subcontractor's operations, means, or methods. Equipment and site safety, which includes the contractor's or subcontractor's employees' general health and safety, is the sole responsibility of the contractor or subcontractor. FTC&H does not



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assume health and safety related responsibilities for the contractor or subcontractor, or representatives of federal, state, or other governmental agencies.

Any questions or comments relating to this HASP should be addressed to:

James A. Susan, P.E.
Corporate Health and Safety Officer
FTC&H
1515 Arboretum Drive, SE
Grand Rapids, MI 49546



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2.0 SITE DESCRIPTION AND BACKGROUND INFORMATION

FTC&H has been retained by the KBRA to conduct a Phase II ESA of the combined three parcels of property that now make up 105 East Michigan Avenue (subject property) in downtown Kalamazoo, Michigan (Figure 1). The purpose of the Phase II ESA will be to investigate the identified RECs and determine if historic operations on, or near, the subject property have adversely impacted the subject property. If contamination is identified at concentrations in excess of Part 201 Residential Cleanup Criteria, the information will be utilized in support of the preparation of a Baseline Environmental Assessment and Section 7a Compliance Evaluation on behalf of the future site developer. The work is being conducted under USEPA Brownfield Assessment Grant BF00E034001-0.

3.0 PROJECT ACTIVITIES

A description of the anticipated field activities are included in the *Sampling and Analysis Plan, Phase II Environmental site Assessment for City of Kalamazoo Brownfield Assessment Grant, Hazardous Substances*. Activities that may take place at the site which may involve contacting contaminated soils and/or groundwater include:

- Geoprobe borings and installation of temporary groundwater monitoring wells to collect soil and groundwater samples.
- Collection of surface soil samples.

Specific details of each of these activities are discussed in Section 4.0 of the SAP.

The chemicals of concern for soil and groundwater are primarily tetrachloroethylene, lead, and arsenic. Reasonable health and safety precautions must be taken to protect individuals working in contaminated areas from potential health hazards. Dermal protection, as well as exposure monitoring, will be required. This HASP summarizes the hazardous and toxic chemicals of concern (Section 6.2), and provides the rationale used to determine the level of protection required for onsite workers (Section 6.3).

The FTC&H Site HSO will designate a temporary exclusion zone around each drilling site. The temporary exclusion zone will be delineated using warning tape and barricades, if appropriate. As the activities continue, the temporary exclusion zone will be modified to meet the work needs (i.e., the temporary exclusion zone will be transient).

Ambient air around each drilling site will also be monitored by the Site HSO using a calibrated PID. FTC&H personnel will position themselves upwind of the drill sites, when possible, to minimize the potential for VOC exposure.

Information gathered by FTC&H's Site HSO will be recorded in field notebooks and daily log forms prepared for the site. The information gathered by FTC&H will be shared with the contractor/subcontractor.

4.0 SITE CONTROL

The Site HSO has the responsibility to coordinate site access and security during the field work. A field truck will be designated as the onsite safety post. The Site HSO will establish the delineated control zones as necessary. Access to the control zones will be limited to authorized personnel. Individuals who do not have proper authorization will be escorted away from the temporary exclusion zone. The various zones are discussed below.

- Temporary Exclusion Zone: This has been designated as the immediate area or activity. These areas will move as the particular activities move throughout the site.
- Exclusion Zone: If an area of obvious contamination, or "hot spot," is encountered and identified during the field activities, then this area will be designated an exclusion zone. The exclusion zone will be marked with signs, stands, warning tape, and/or other appropriate means.
- Support Zone: This is a designated area upwind of the site activities. This area may move according to changing site conditions. The onsite safety post will be part of the support zone.
- Decontamination Zone: The decontamination/equipment cleaning area will be established by the Site HSO at a designated location on the site.

5.0 ONSITE ORGANIZATION AND COORDINATION

The following FTC&H personnel are designated to carry out stated job functions onsite:

Project Manager/Project Coordinator	Mr. Steven M. Kimm, CPG	269-544-6952
Quality Assurance Officer	Ms. Mary Crosby-Davies	616-464-3749
Corporate HSO	Mr. James A. Susan, P.E.	616-464-3734
Site HSO	Mr. Brad Peuler	cell No. 269-760-4844

These personnel may be onsite at one time or another and can be contacted at FTC&H's main office telephone number, (616) 575-3824, at 1515 Arboretum Drive SE, Grand Rapids, MI 49546 or Kalamazoo office, (269) 375-3824 at 4775 Campus Drive, Kalamazoo, MI 49008.

The Project Manager will interface with regulatory agency representatives and monitor performance. The Project Manager, or designee, will also be responsible for the overall coordination and supervision of the field activities, and will maintain site log books and applicable records generated during the field work.

The FTC&H Site HSO has the required training and health and safety experience, as specified in 29 CFR 1910.120, to perform this function. The designated FTC&H Site HSO will be directly responsible to the Project Manager for safety recommendations on the site. When the FTC&H Site HSO is not onsite, another qualified member of the FTC&H team will act in this capacity. The FTC&H Site HSO will have complete authority for implementing this HASP and for ensuring that all procedures are adhered to by FTC&H site personnel. The FTC&H Site HSO shall have the authority to remove any FTC&H employee from the site for HASP violations and to institute changes in any procedures by FTC&H that are considered necessary. If a health and safety related conflict cannot be resolved between the Site HSO and the Project Manager, the FTC&H Site HSO will seek ultimate resolution of the conflict with the Corporate HSO. FTC&H employees and assignees are not responsible for enforcement of the contractor's or subcontractor's HASP.

All members of the FTC&H team who will be working within a temporary exclusion zone or exclusion zone must have received the required training specified in 29 CFR 1910.120. Documentation of individual training records are retained by the FTC&H Human Resources Department.



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6.0 HAZARD EVALUATION

The following section identifies the potential hazards that may be encountered during site activities.

6.1 PHYSICAL HAZARDS

6.1.1 HEAVY EQUIPMENT, TERRAIN, AND UTILITY HAZARDS

The potential for accidents exists whenever heavy equipment is in operation. Caution must be exercised when equipment is operating and moving throughout the site. For example, when heavy equipment is in use, the hazard exists for worker's clothing to become entangled in the machinery. Personnel should be a minimum of 10 feet beyond the reach of the equipment when heavy machinery is in use.

Site terrain and other physical characteristics may present additional hazardous working conditions. The location of site terrain/physical hazards must be identified prior to performing work activities. Caution must be exercised to prevent slips and falls. Drilling contractors/subcontractors are responsible for the identification and location of underground utilities and other physical hazards prior to performing drilling activities.

6.1.2 HEAT STRESS

Workers may encounter heat stress during work conducted in the spring and summer seasons. As further discussed in Section 12.0 of this HASP, the primary effects of heat stress range from transient heat fatigue to severe illness. Work limitations have been established to prevent heat stress based on the level of PPE being used.

The FTC&H Site HSO will monitor the condition of FTC&H personnel to guard against heat stress during hot and humid weather conditions. FTC&H workers will have been trained to recognize the symptoms of heat effects in their coworkers. Symptoms of heat stress are described in Section 12.0 of this HASP. Supervisors and workers will use the buddy system to observe each other. Refer to Table 1 to calculate work periods.

6.1.3 COLD STRESS

Cold injury (frost bite, hypothermia) and impaired ability to work are dangers at low temperatures and low wind chill factors. Areas of the body which have a high surface area to volume ratio are the most susceptible to frost bite. Two factors influence the development of a cold injury: ambient temperature and wind speed. The Site HSO will monitor conditions and provide insulating garments and a warm shelter, as necessary. Work stoppages due to cold weather will be at the discretion of the Site HSO. The following guidelines will be followed:

- If site temperatures are 15°F or lower, the local radio station will be monitored to estimate wind chill.
- If reported wind chill is 0°F or above, individuals exposed to wind will take warm-up breaks every two hours.
- If reported wind chill is 0°F or below, no work will be performed in areas exposed to the wind.

Persons working onsite should watch for warning signs of cold injury, i.e., the stages of frost bite, including a sudden whitening of the skin or gradual stiffening of the outer layers of the skin. Affected persons will be moved to an onsite safety post for quick warming of the exposed extremity with warm fluids or sterile cloth materials. The injured area will be kept elevated and covered with sterile, dry material after warming. Individuals will be transported to the hospital, if appropriate.

The warning signs of hypothermia include shivering, listlessness or sleepiness, slow pulse, glassy stare, and freezing of extremities. Any of these conditions require immediate attention and the Site HSO must be notified if they occur. Affected individuals will be moved to the onsite safety post where they will be wrapped in blankets and given warm fluids until the condition improves. Individuals will be transported to the hospital, if appropriate.

6.2 CHEMICAL HAZARDS

The chemicals of concern may be found in the soil or groundwater. These chemicals of concern are summarized in Table 2 of this HASP. Table 2 summarizes these chemical hazards, and lists the ACGIH 8-hour TWA limits for exposure and the skin absorption designation for substances known to be onsite.

The primary potential hazard during the field work is dermal exposure (skin contact and absorption) to contaminated soils or groundwater which may be exposed during drilling and sampling activities. The

nature of these activities and site characteristics are such that exposure to the compounds at or above the PEL/TWA is not anticipated. However, if use of an air-purifying respirator with an organic filter is required, work will be stopped and the HASP will be modified for the appropriate PPE.

Table 3 summarizes health hazards of contaminants that are known or suspected to be present. The table summarizes routes of exposure, target organs, exposure limits, and appropriate first aid measures. If additional information about any of the identified compounds or "new" compounds is needed, the information will be obtained from an online computer database to which FTC&H subscribes. The database can be accessed 24 hours per day with a computer and modem, and includes MSDS information, environmental information, chemical and physical properties, handling and disposal information, toxicity information, and other potentially useful databases. The Site HSO can access this information as needed.

6.3 PERSONAL PROTECTIVE EQUIPMENT

Based on an evaluation of potential hazards known to date, Level D personal protection is anticipated for the applicable work areas and tasks. No changes in the specified levels of protection will be made without approval of the FTC&H Site HSO.

Based on available soil data to date, volatilization of VOCs from subsurface soils is not anticipated. Respiratory protection is not deemed necessary unless significant elevated VOC concentrations are present.

No special protective equipment or clothing is required for areas where site activities are not performed. Health and safety standards will be normal work safety procedures, such as proper work practices for specific equipment, use of steel-toe and shank safety boots, shirts, hard hats, and safety glasses.

Support personnel will be a Level D. If PPE for specific site activities is upgraded to Level C, then work will be stopped and the HASP modified. Specific protection equipment required for Level D is:

- Latex gloves.
- Steel-toe safety boots



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- Hard hat, ANSI-approved when appropriate or working near the drilling rig, based on the site activity, or if construction or drilling equipment is in use.
- Safety glasses

An upgrade to Modified Level D protection will also be necessary if fugitive dust is present. In addition to the PPE listed for Level D, Modified Level D protection will include standard disposable Tyvek body coveralls (or equivalent) and PVC or nitrile boot covers. A dust mask for particulate will also be used if fugitive dust is present.

7.0 ONSITE WORK CREWS

In consideration of hazards associated with the potential for chemical exposure, three types of work crews have been established.

- Type I—Exclusion Zone Activities: The Site HSO or designee will be present to monitor the zone during the work, as necessary. The Site HSO and work crew will be in the proper PPE (minimum Level D).
- Type II—Temporary Exclusion Zone Activities: The Site HSO or designee and work crew will be in the proper PPE (minimum Level D).
- Type III—Nonexclusion Zone Activities: The Site HSO or designee and work crew will be in the proper PPE (minimum Level D).

The Site HSO will be instructed on proper decontamination procedures (see Section 9.0), and will be responsible for personnel and equipment decontamination. Work crew members will assist each other with equipment removal, when appropriate.

If the level of protection is changed during the work, FTC&H personnel will be instructed on proper decontamination procedures. In addition, the HASP will be updated to reflect changes in personal protection levels. The most current HASP will be maintained with the Site HSO.

FTC&H staff who will work within the temporary exclusion zone and exclusion zone must abide by the following restrictions, in particular, to prevent inhalation and ingestion of the contaminants known to be in the soils:

- No food, cigarettes, gum, throat lozenges, or similar material can be used.
- There shall be no food, cigarettes, or other similar articles in open shirt pockets.
- No coffee or other beverages shall be consumed onsite.
- Upon leaving the exclusion zone, hands and face must be washed before eating, drinking, or smoking.



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8.0 COMMUNICATION PROCEDURES

Three blasts of the horn is the emergency signal to indicate that all FTC&H personnel should leave the temporary exclusion zone or exclusion zone and immediately report to a predetermined point.

The following standard hand signals will be used for communication in instances when full-face respirators are used or verbal communication is not possible:

Hand gripping throat:

Grip partner's wrist or both hands around waist:

Hands on top of head:

Thumbs up:

Thumbs down:

Out of air, cannot breathe

Leave area immediately

Need assistance

OK, I am all right, I understand

No, negative

9.0 DECONTAMINATION PROCEDURES

The following decontamination procedures will be followed while in the Level D protection. A separate decontamination area will be established by the Site HSO at a designated location. The following decontamination supplies will be available: wash bucket, rinse bucket, brushes, clean water, and Liquinox® detergent. All personnel who have worked in an exclusion zone or temporary exclusion zone must pass through the following decontamination sequence before leaving the project site:

- Discard disposable PPC
- Clean soil from equipment, boots, clothing, etc.
- Wash hands

All decontamination solutions will be containerized. Disposable clothing, including coveralls, will be collected and double-bagged for disposal. Shower facilities are not provided onsite. Hence, each individual will be required to shower, as soon as practical after leaving the site, at the end of the work day. Hand-washing facilities, which will consist of 5-gallon pails of clean water, will be provided at the site.

All reusable PPE and tools will be wiped with rags and rinsed with a Liquinox® detergent (¼ cup Liquinox® detergent per 5 gallons of water), followed by a clean water rinse. Disposable equipment will be bagged for disposal. No washing of disposable equipment is required. Large equipment, such as trucks, which has been in the exclusion zone, should be visually inspected and steam cleaned with the Liquinox® detergent followed by a clean water rinse, as necessary. All sampling equipment decontamination wash and rinse water will be containerized.

10.0 RECORD KEEPING

All records shall be kept at the onsite safety post by the Site HSO. Information to be recorded and kept on file will include the following:

- Daily record of all onsite staff
- Use records of all PPE
- Monitoring records of the temporary exclusion zone, as necessary
- Medical certification and limitation information, as necessary

Information on file at the onsite safety post will include:

- Copy of site-specific HASP and any updates or modifications
- Records for maintenance of PPE
- Emergency accident report forms
- Hazardous waste exposure forms



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11.0 EMERGENCY CONTACTS AND PROCEDURES

The following standard emergency procedures will be used by onsite FTC&H personnel. The Site HSO, Bradley D. Peuler, cell phone No. 269-760-4844, shall be notified of any onsite emergencies.

Personnel Injury in the Work Zone: Upon notification of an injury in the work zone, the designated emergency signal, three horn blasts, will be sounded. Appropriate onsite first aid should be administered, an ambulance should be requested, if necessary, and the designated medical facility should be notified by the Site HSO or designee. An Accident Report Form (Appendix 1) will be filed with the Site HSO for each occurrence. Re-entry into the work zone will be permitted once the cause of the injury or symptoms is determined and preventive measures are taken.

Fire/Explosion: Upon notification of a fire or explosion onsite, the designated emergency signal, three horn blasts, will be sounded. The fire department will be alerted promptly and personnel moved a safe distance from the involved area. The site personnel will assemble for a head count at a predetermined assembly location in an area away from the fire or explosion.

PPE Failure: If a person experiences a failure or alteration of protective equipment that affects the protection factor, that person will immediately leave the exclusion zone. Re-entry will not be permitted until the equipment has been repaired or replaced. A Hazardous Waste Exposure Record (Appendix 1) will be filed with the Site HSO and the Corporate HSO for each occurrence.

Other Equipment Failure: If any other equipment onsite fails to operate properly, the Site HSO will be notified to determine the effect of this failure on continuing operations onsite. If the failure affects the safety of personnel or prevents completion of the work, the equipment will be replaced so the work can continue.

In all situations, when an onsite emergency results in evacuation of the work zone, personnel shall not reenter until:

- The conditions resulting in the emergency have been corrected
- The hazards have been reassessed
- The Site HASP has been reviewed, and modified, if necessary
- Site personnel have been briefed on any changes in the HASP



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Emergency medical care is available at Bronson Methodist Hospital, in Kalamazoo, Michigan (Figure 2, Hospital Route Map). First-aid kits, including a biofluids kit, and emergency eye solutions will be maintained at the onsite safety post.

List of emergency telephone numbers:

Fire	Kalamazoo Fire Department (Emergency)	911
Police	Kalamazoo Police Department (Emergency).....	911
Sheriff	Kalamazoo County Sheriff Department (Emergency).....	911
Ambulance/Paramedics		911
Poison Control	1-800-764-7661
Hospital	Bronson Methodist Hospital (Emergency/Trauma).....	(269) 341-6386
	601 John Street, Kalamazoo, Michigan	
Miss Dig Underground Utilities.....		1-800-482-7171

Emergency telephone numbers will be kept with the Site HSO, Mr. Bradley Peuler, cell phone No. 269-760-4844.

12.0 FIRST AID

Individuals who have the potential to come into contact with bodily fluids, i.e., blood, while performing first aid, should follow the preventive measures and procedures in 29 CFR 1910.1030 (Bloodborne Pathogen Standard). First-aid kits, including a biofluids kit, and emergency eye solutions shall be maintained at the onsite safety post.

1. Bites

- a. Animal Bites—Thoroughly wash the wound with soap and water. Flush the area with running water and apply a sterile dressing. Immobilize affected part until the victim has been attended by a physician. If possible, see that the animal is kept alive and in quarantine. Obtain name and address of the owner of the animal.
- b. Insect Bites—Remove "stinger" if present. Keep affected part down below the level of the heart. Apply ice bag. For minor bites and stings, apply a soothing lotion such as Calamine.

2. Burns and Scalds

- a. Minor Burns—DO NOT APPLY VASELINE OR GREASE OF ANY KIND. Apply cold water until pain subsides. Cover with a dry, sterile gauze dressing. Do not break blisters or remove tissue. Seek medical attention as necessary.
- b. Severe Burns—Do not remove adhered particles of clothing. Do not apply ice or immerse in cold water. Do not apply ointment, grease, or Vaseline. Cover burns with thick sterile dressings. Keep burned feet or legs elevated. Seek medical attention immediately.
- c. Chemical Burns—Wash away the chemical-soaked clothing with large amounts of water until EMS arrives, or for at least 10 minutes after the burning pain has stopped. Remove victim's chemical-soaked clothing. If dry lime, brush away before flushing. Apply sterile dressing and seek medical attention immediately.

3. Cramps

- a. Symptoms—Cramps in muscles of abdomen and extremities. Heat exhaustion may also be present.
- b. Treatment—The same as for heat exhaustion.

4. Cuts. Apply pressure with sterile gauze dressing and elevate the area until bleeding stops. Apply a bandage and seek medical attention as necessary.

5. Eyes

- a. Foreign Objects—Keep the victim from rubbing the eye. Flush the eye with water. If flushing fails to remove the object, apply a dry, protective dressing. Also cover the uninjured eye to decrease eye movement. Seek medical attention.
- b. Chemicals—Flood the eye continuously with water from the inside corner out. Continue flushing with clear water until medical attention is obtained.

6. Fainting. Keep the victim lying down. Loosen tight clothing. If victim vomits, roll victim onto their side or turn their head to the side. If necessary, wipe out mouth. Maintain an open airway. Bathe the victim's face gently with cool water. Unless recovery is prompt, seek medical attention.

7. Fractures. Deformity of an injured part usually means a fracture. If fracture is suspected, splint the part. DO NOT ATTEMPT TO MOVE THE INJURED PERSON. Seek medical attention immediately.

8. Frostbite

- a. Symptoms—Just before frostbite occurs, skin may be flushed, then change to white or grayish-yellow. Pain may be felt early then subside. Blisters may appear, affected part feels very cold and numb.
- b. Treatment—Bring victim indoors, cover the frozen area, provide extra clothing and blankets. Rewarm frozen area by gently soaking in warm water—NOT HOT WATER. DO NOT RUB THE PART. Seek medical attention immediately.

9. Heat Exhaustion. Caused by exposure to heat, either sun or indoors.

- a. Symptoms—Near normal body temperature. Skin is pale, moist, and clammy. Rapid, weak pulse and shallow breathing. Profuse sweating, tiredness, weakness, headache, perhaps cramps, nausea, dizziness, and possible fainting.
- b. Treatment—Keep in prone position in a cool location and elevate victim's feet 8 to 12 inches. Loosen clothing, apply cool wet cloths. If conscious, give sips of cool water (one 4-ounce glass every 15 minutes). Seek medical attention immediately.

10. Heat Stroke

- a. Symptoms—Very high body temperature, sometimes as high as 105°F. Skin is hot, red, and dry; very small pupils. Pulse is rapid and strong. Person may be disoriented and confused, loss of coordination. Person may be unconscious.
- b. Treatment—Move victim out of the heat into a cooler place; keep victim in a prone position with head elevated; remove clothing and immerse person in a cool bath or repeatedly sponge the bare skin with cool water or rubbing alcohol. Seek medical attention immediately.

11. Poisoning. Call the poison control center for instruction on immediate care. If victim becomes unconscious, keep the airway open. If breathing stops, give artificial respiration by mouth-to-mouth breathing. Call an emergency squad as soon as possible.

12. Poison Ivy. Remove contaminated clothing; wash all exposed areas thoroughly with soap and water followed by rubbing alcohol. If rash is mild, apply Calamine or other soothing skin lotion. If a severe reaction occurs, seek medical attention.

13. Puncture Wounds. If puncture wound is deeper than skin surface, seek medical attention. Serious infection can arise unless proper treatment is received.

14. Shock

- a. Symptoms—Mental confusion, restlessness, tissue color is pale or bluish; moist, clammy skin; shivering; rapid weak pulse; breathing may be shallow, labored, gasping, or noisy; vomiting.
- b. Treatment—Ensure open airway and adequate breathing. Check the carotid pulse and ensure adequate air circulation. Control serious bleeding, if present. Maintain body temperature. Do not overheat the patient, but do not allow the person to become chilled. Seek medical attention.

15. Sprains. Elevate injured part and apply ice bag or cold packs. DO NOT SOAK IN HOT WATER. If pain and swelling persist, seek medical attention.

16. Unconsciousness. Never attempt to give anything by mouth. Keep victim lying flat, maintain open airway. If victim is not breathing, provide artificial respiration by mouth-to-mouth breathing and call an emergency squad as soon as possible.

Incidents involving exposure to toxic chemicals greater than the TWA or PEL levels must be reported to the Site HSO. A Hazardous Waste Exposure Record (Appendix 1) must be completed and submitted to the Corporate HSO. Potential exposures may be determined primarily by air monitoring. If exposure is suspected or confirmed, back out of the area and ventilate. If exposure is due to direct contact, flush the exposed area with clean water and proceed to the nearest medical facility for additional treatment. Information on the type and time of exposure should be provided to medical personnel. Treatment will depend on exposure.

Incidents involving injury must be reported to the Site HSO and an Accident Report Form (Appendix 1) must be completed and directed to the Corporate HSO. Investigative and follow-up reports of the accident will be completed and maintained with the site records. Illnesses must also be reported to the Site HSO.



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13.0 MEDICAL MONITORING PROGRAM

All FTC&H personnel working within the temporary exclusion zone or exclusion zone must participate in an employer-authorized and -provided medical surveillance program, as specified in 29 CFR 1910.120(f). In addition, any FTC&H personnel who are or may be exposed to hazardous substances or health hazards at or above the permissible exposure limits, who wear a respirator for 30 days or more a year, or who are injured due to overexposure from an emergency incident involving hazardous substances or health hazards must also participate in the referenced medical surveillance program. This program will include employment entry and exit physicals, yearly physical examination, general safety (OSHA required) training/instruction, respirator-use training, fit testing for all types of appropriate respirators, and a medical professional's evaluation for the ability to wear and work with a respirator prior to actual use of such equipment. Physicals may also be conducted before and after a project, and/or at the demand of the employee. FTC&H staff involved in activities requiring the use of respiratory protection equipment will not be allowed to participate in work activities unless they are properly trained in the correct use of a respirator and fit tested for use of the respirator.



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14.0 HAZARD COMMUNICATION PLAN

A Hazard Communication Plan, in accordance with 29 CFR 1910.1200, will be prepared for hazardous chemicals brought to the site by FTC&H personnel for their use. However, at this time, it is not anticipated that hazardous substances, subject to 29 CFR 1910.1200, will be brought to the site by FTC&H. The Hazard Communication Plan will exclude contact with hazardous materials onsite as these circumstances are covered by the HASP.



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15.0 FAMILIARITY WITH HASP AND ITS PROVISIONS

FTC&H site personnel will be given a copy of the HASP, and will sign the acknowledgment (Appendix 1) stating that they have read and understand this HASP. A copy of this HASP will be maintained at the onsite safety post.

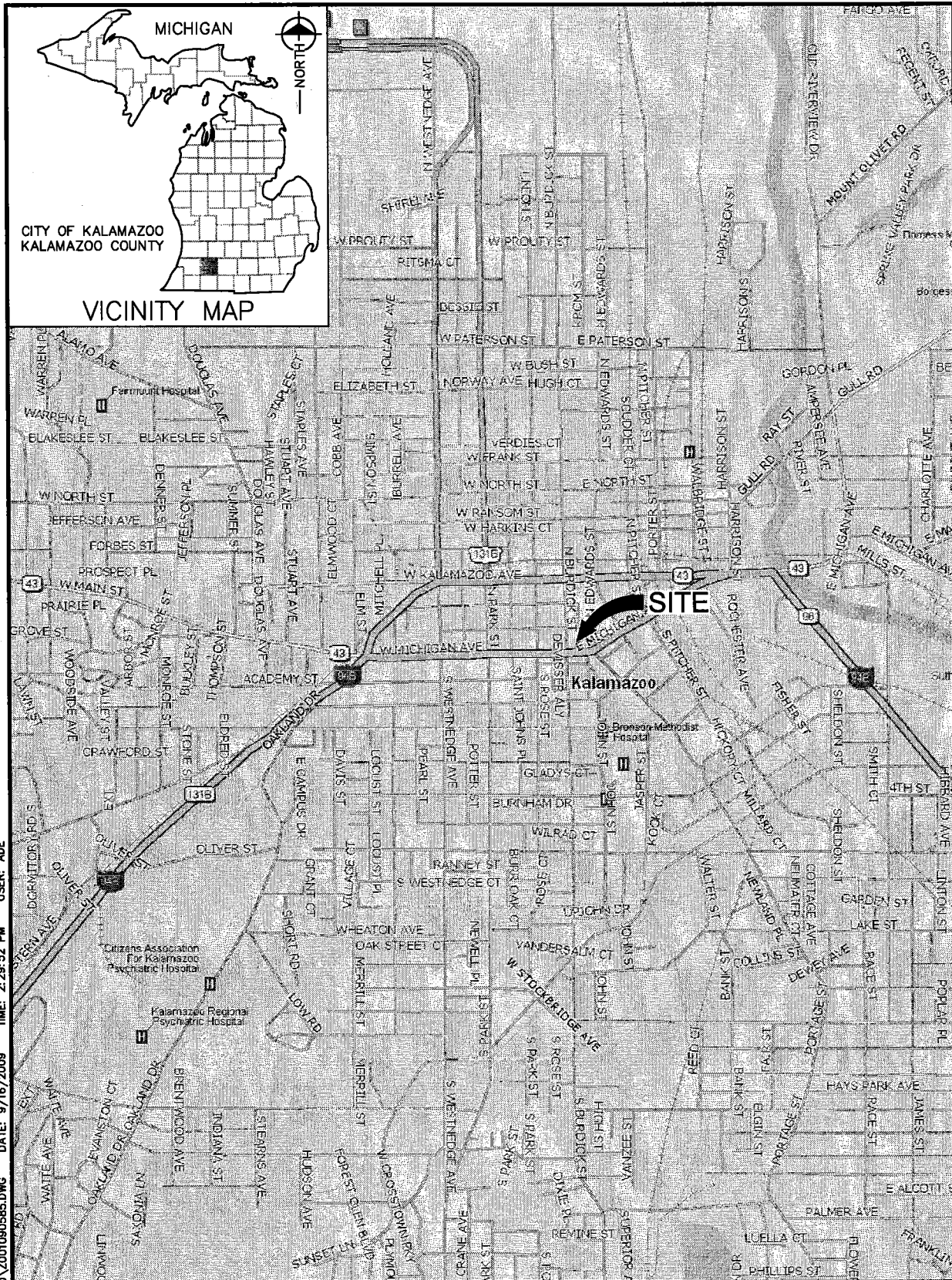
Revisions to the site HASP can only be made with the approval of the Corporate HSO, Project Manager, and the Site HSO. All changes to the HASP must be provided to FTC&H site personnel immediately.

All FTC&H staff who must wear a respirator will have the required OSHA 40-hour health and safety training. FTC&H staff who are onsite only occasionally for specific limited tasks, such as land surveying, will have, at a minimum, the 24-hour health and safety training as required by OSHA. Appropriate training records will be kept onsite under the supervision of the Site HSO.

Figures

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fic&h

engineers
scientists
architects
constructors

fishbeck, thompson,
carr & huber, inc.

Hard copy is
intended to be
8.5"x11" when
plotted. Scale(s)
indicated and
graphic quality may
not be accurate for
any other size.

City of Kalamazoo
105-127 East Michigan Avenue, Kalamazoo, Michigan

**Health and Safety
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G090585.

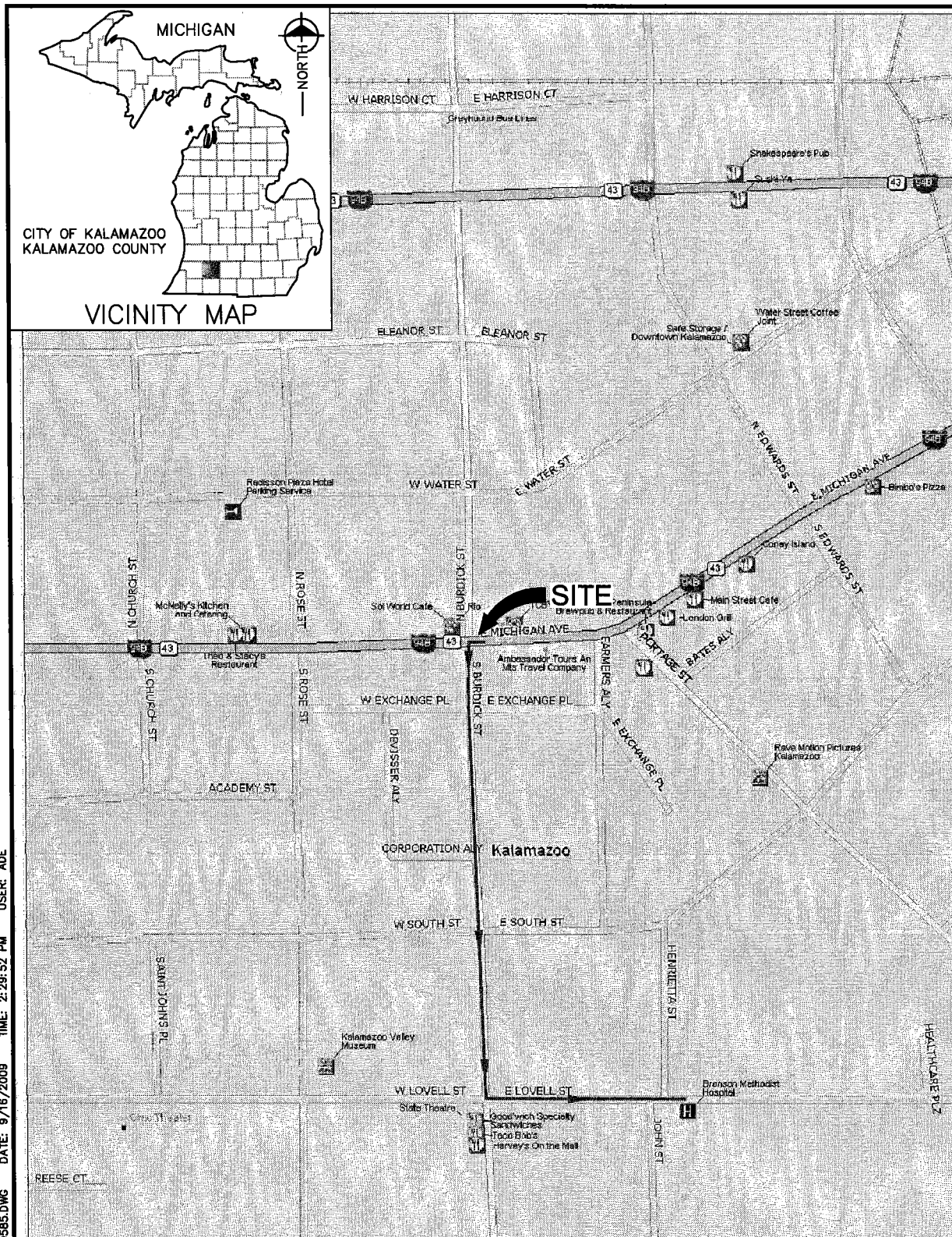
FIGURE NO.

1

SITE LOCATION MAP

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REFERENCE:
DeLORME STREET ATLAS
USA - 2008

Scale: 1" = 300'
0 150 300

HOSPITAL ROUTE MAP

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engineers
scientists
architects
constructors

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105-127 East Michigan Avenue, Kalamazoo, Michigan
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FIGURE NO.

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Tables

Table 1 –Suggested Frequency of Physiological Monitoring for Fit and Acclimatized Workers*

Health and Safety Plan for Phase II Environmental Site Assessment
105 East Michigan Avenue, Kalamazoo, Michigan

Adjusted Temperature**	Modified Level D Normal Work Ensemble***	Levels C & B Impermeable Ensemble
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°F to 90°F (30.8°C to 32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5°F to 87.5°F (28.1°C to 30.8°C)	After each 90 minutes of work	After each 60 minutes of work
77.5°F to 82.5°F (25.8°C to 28.1°C)	After each 120 minutes of work	After each 90 minutes of work
Below 77.5°F (Below 25.3°C)	After each 120 minutes of work	After each 120 minutes of work
Source: Henschel, A., Memorandum to Sheldon Rabinovitz from Austin Henschel, NIOSH, Cincinnati, Ohio, June 20, 1985.		
* For work levels of 250 kilocalories/hour.		
** Calculate the adjusted air temperature (T_{adj}) by using this equation for dry bulb use: $T_{adj} \text{ } ^\circ\text{F} = T_a \text{ } ^\circ\text{F} + (13 \times \text{percent sunshine [i.e., } 100\% = 1.00 \text{ and } 0\% = 0.00])$. Measure air temperature (T_a) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100% sunshine = no cloud cover and a sharp, distinct shadow; 0% sunshine = no shadows.)		
*** A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.		

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Table 2 – Chemical Hazard Evaluation Summary

Health and Safety Plan for Phase II Environmental Site Assessment
105 East Michigan Avenue, Kalamazoo, Michigan

Contaminants	Matrix	TWA ¹	IDLH ²	Skin Absorption
Arsenic	Soil/Groundwater	0.010 mg/m ³	Ca -5 mg/m ³	yes
Lead	Soil/Groundwater	0.050 mg/m ³	100 mg/m ³	yes
Tetrachloroethylene	Soil/Groundwater	100 ppm	Ca – 150 ppm	yes
Ca indicates that NIOSH considers this substance a potential human carcinogen. NIOSH recommends the use of the most protective respirators for exposure to these substances.				
¹ TWA values based on ACGIH 1998 <i>Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices</i> .				
² IDLH values based on U.S. Department of Health and Human Services, <i>NIOSH Pocket Guide to Chemical Hazards</i> (1997).				

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Table 3 – Exposure Effects of Contaminants

Health and Safety Plan for Phase II Environmental Site Assessment
105 East Michigan Avenue, Kalamazoo, Michigan

Chemical Name	TWA - IDLH Levels	Exposure Route	Symptoms of Exposure	First Aid		Target Organs
Arsenic	TWA – 0.01 mg/m ³ IDLH - Ca [5 mg/m ³]	Inh Abs Ing Con	Ulceration of nasal septum, dermatitis, GI disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, [carc]	Eye:	Irr Immed	Liver, kidneys, skin, lungs, lymphatic system
				Skin:	Soap wash immed	
				Breath:	Resp support	
				Swallow:	Medical attention immed	
Lead	TWA – 0.050 mg/m ³ IDLH - 100 mg/m ³	Inh Ing Con	Lassitude, insomnia, facial pallor, anorexia, low-weight, malnutrition, constipation, abdominal pain, colic, anemia, gingival lead line, tremor, paraesthesia, wrist, ankles; encephalopathy; kidney disease; irritates eyes; hypotension	Eye:	Irr Immed	Eyes, GI tract, CNS, kidneys, blood, gingival tissue
				Skin:	Soap wash prompt	
				Breath:	Resp support	
				Swallow:	Medical attention immed	
Tetrachloroethylene	TWA – 100 ppm IDLH – Ca [150 ppm]	Inh Ing Con Abs	Irritates eyes, skin, nose, throat, respiratory system; malaise; flush face, neck; dizziness, incontinence; headache; drowsiness; skin erythema; liver damage; [carc]	Eye:	Irr Immed	Eyes, skin, respiratory system, liver, kidneys, CNS
				Skin:	Soap wash prompt	
				Breath:	Resp support	
				Swallow:	Medical attention immed	

Table 3 – Exposure Effects of Contaminants
Health and Safety Plan for Phase II Environmental Site Assessment
105 East Michigan Avenue, Kalamazoo, Michigan

Abbreviations:			
Abdom	= Abdominal	eosin	= Eosinophilia
abs	= Skin Absorption	eryt	= Erythema
anor	= Anorexia	euph	= Euphoria
arry	= Arrhythmias	ftg	= Fatigue
asphy	= Asphyxia	GI	= Gastrointestinal
bron	= Bronchitis	gidd	= Giddiness
Ca	= Carcinogen	head	= Headache
[carc]	= Carcinogen	hyperpig	= Hyperpigmentation
card	= Cardiac	immed	= Immediately
CNS	= Central Nervous System	inco	= Incoordination
con	= Skin and/or Eye Contact	incr	= Increase(d)
conf	= Confusion	ing	= Ingestion
conj	= Conjunctivitis	inh	= Inhalation
constip	= Constipation	inj	= Injury
convuls	= Convulsions	insom	= Insomnia
corn	= Corneal	irr	= Irrigate
CVS	= Cardiovascular System	irrit	= Irritation
depres	= Depressant/Depression	irrity	= Irritability
derm	= Dermatitis	lac	= Lacrimation
dist	= Disturbance	lass	= Lassitude
dizz	= Dizziness	leucyt	= Leukocytosis
drow	= Drowsiness	leupen	= Leukopenia
dysp	= Dyspnea		
		low-wght	= Weight loss
		malnut	= Malnutrition
		monocy	= Monocytosis
		muc memb	= Mucous Membrane
		musc	= Muscle
		narco	= Narcosis
		nau	= Nausea
		ner	= Nervousness
		opac	= Opacity
		para	= Paralysis
		pares	= Paresthesia
		perf	= Perforation
		prot	= Proteinuria
		resp	= Respiratory
		salv	= Salivation
		sens	= Sensitization
		som	= Somnolence
		sys	= System
		verti	= Vertigo
		vis	= Visual
		vomit	= Vomiting
		weak	= Weakness

Source: NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, June 1990.

Appendix 1

HEALTH & SAFETY ACKNOWLEDGMENT

I, _____, hereby acknowledge that I have read the *Health & Safety Plan for Phase II Environmental Site Assessment, 105 East Michigan Avenue, Kalamazoo, Michigan*, and am familiar with its provisions.

Date _____

ACCIDENT/INJURY REPORT

Project Name _____

Project No. _____

This report is a supplement to the Injury Report required by our insurance carrier or the State Worker's Compensation Department. A copy of this report must be attached to the FTC&H copy of any other injury reports that may be required by other agencies or organizations, but it is not to be sent to our insurance carrier, the State Workers' Compensation Department, or others, unless instructed to by the Corporate Health and Safety Officer. This report must be completed prior to the end of the shift during which the incident occurred. Reports to be filed with our insurance carrier or the State Worker's Compensation Department will be completed by the Corporate Health and Safety Officer or the Human Resource Department.

I. IDENTIFICATION OF INJURED PERSON

Name of Injured Person _____ Home Phone _____

Home Address _____

Date of Birth _____

Is this person an employee of FTC&H? _____

Occupation/Title _____

If Injured is a third party (owner's employee, visitor, etc.) describe and give company name

II. ACCIDENT/INJURY INFORMATION

Date/time of accident _____ Date/time reported _____

Immediate Supervisor _____
(Name) (Title)

Where did accident happen? _____

Witness(es): (Complete accident interview forms for serious accidents.)

Name _____
(Signature)

Name _____
(Signature)

Date of 1st day of lost time _____ Lost time estimate: _____ days

Describe the accident and any resulting injuries (specify part of body injured and type of injury):

What unsafe act, practice, or condition caused the accident?

(See other side for additional comments)

ACCIDENT/INJURY REPORT (continued)

How can a similar accident be prevented? (Include action to be taken)

Are there any substance abuse concerns? If yes, please explain. _____ Yes _____ No

What is the immediate disposition of employee?

_____ On-site first-aid given _____ Returned to work,
_____ Off-site medical treatment; if so, first aid given by whom and/or where taken?

Other (please explain) _____

Employee Signature _____ Date _____

Owner notified _____
(Owner/Client Representative) (Notified By) (Date/Time)

Return completed form to Human Resources.

PERSONAL HAZARDOUS WASTE EXPOSURE RECORD

Return Form to the Human Resources Director

NAME _____ DATE _____

SITE _____

NUMBER OF HOURS ONSITE _____

WEATHER CONDITIONS _____

AMBIENT AIR/SOIL/WATER INDICATORS

Laboratory

✓ GC _____

✓ AA _____

✓ Other _____

Onsite

✓ GC _____

✓ OVA _____

✓ Other _____

Detector Tubes _____

Other _____

TYPE OF EXPOSURE (I.E., INHALATION, SOIL/WATER CONTACT) _____

OPERATION PERFORMED (I.E., TEST PIT INSPECTION, SAMPLING, DRILLING) _____

CHEMICALS KNOWN PRESENT _____

PROTECTIVE EQUIPMENT WORN

- | | |
|---|--|
| <input type="checkbox"/> Hard Hat | <input type="checkbox"/> Safety Shoes (steel toe & shank) |
| <input type="checkbox"/> Inner Lab Gloves | <input type="checkbox"/> Outer Chemical Resistant Gloves (Type: _____) |
| <input type="checkbox"/> Safety Glasses | <input type="checkbox"/> Chemical Resistant Boots (Type: _____) |
| <input type="checkbox"/> Half-Face Respirator (Cartridge Type: _____) | |
| <input type="checkbox"/> Full-Face Respirator (Cartridge Type: _____) | |
| <input type="checkbox"/> Coveralls (Type: _____) | |
| <input type="checkbox"/> Other _____ | |

DECONTAMINATION MEASURES TAKEN

- | | | |
|--|---------------------------------|---|
| <input type="checkbox"/> Change of Clothes | <input type="checkbox"/> Shower | <input type="checkbox"/> Change of Protective Equipment |
| <input type="checkbox"/> Other _____ | | |

PERSONAL PROTECTIVE EQUIPMENT DECONTAMINATION MEASURES TO BE TAKEN _____

UNUSUAL SITE CONDITIONS/OCCURRENCES _____

OBSERVED HEALTH EFFECTS _____

NOTES _____

SIGNATURE _____